

AMENDMENTS TO THE CLAIMSListing Of The Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (Currently Amended). A communication device for communicating with a plurality of communication terminals in a multiple-access communication system, comprising:

correlation calculation means for calculating a correlation ~~of~~ between a received signal including a plurality of signals respectively transmitted from the plurality of communication terminals using ultra-wideband (UWB) communication waveforms ~~with respect to~~ and local pulses at possible positions in the respective signals transmitted from each of the plurality of communication terminals; and

interference canceling means for removing a multiple-access interference among the plurality of signals transmitted from the plurality of communication terminals from the calculated correlation; and

demodulation means for demodulating data transmitted from each of the plurality of communication terminals based on ~~the calculated correlation and a multiple-access~~

~~interference among the plurality of signals transmitted from the plurality of communication terminals~~ an output from the interference canceling means.

Claim 2 (Previously Presented). The communication device according to Claim 1, wherein the plurality of signals transmitted from the plurality of communication terminals are generated by modulating data by means of M-ary pulse position modulation.

Claim 3 (Previously Presented). The communication device according to Claim 1, wherein the plurality of signals transmitted from the plurality of communication terminals are generated by modulating data by means of M-ary orthogonal modulation.

Claim 4 (Previously Presented). The communication device according to Claim 1, wherein the demodulation means demodulates data by detecting one of an optimum symbol and an optimum symbol sequence based on the calculated correlation and the multiple-access interference among the plurality of signals transmitted from the plurality of communication terminals.

Claim 5 (Previously Presented). The communication device according to Claim 4, wherein the demodulation means detects one of the optimum symbol and the optimum symbol sequence by means of maximum-likelihood estimation based on the correlation, a correlation matrix indicating the correlation among the pulses at possible positions in the respective transmitted signals, the energy of the respective transmitted signals, and the possible pulse positions.

Claim 6 (Previously Presented). The communication device according to Claim 1, wherein the demodulation means demodulates data by detecting one of a suboptimum symbol and a suboptimum symbol sequence based on the calculated correlation and the multiple-access interference among the plurality of signals transmitted from the plurality of communication terminals.

Claim 7 (Currently Amended). The communication device according to Claim 6, wherein the demodulation means comprises:

~~conversion~~ inverse correlation calculator means for making a conversion of the calculated correlation using an inverse matrix of a correlation matrix indicating the

correlation among the pulses at possible positions in the respective transmitted signals; and

detection means for detecting one of the suboptimum symbol and the suboptimum symbol sequence based on the output of the ~~conversion~~ inverse correlation calculator means.

Claim 8 (Previously Presented). The communication device according to Claim 6, wherein the demodulation means converts the calculated correlation such that a mean square error becomes minimum and detects one of the suboptimum symbol and the suboptimum symbol sequence based on the converted correlation.

Claim 9 (Currently Amended). A method of communication for communicating with a plurality of communication terminals in a multiple-access communication system, comprising the steps of:

calculating a correlation ~~of~~ between a received signal including a plurality of signals respectively transmitted from the plurality of communication terminals using ultra-wideband (UWB) communication waveforms, ~~with respect to~~ and local pulses at possible positions in the respective

signals transmitted from each of the plurality of communication terminals; ~~and~~

removing a multiple-access interference among the plurality of signals transmitted from the calculated correlation; and

demodulating data transmitted from each of the plurality of communication terminals based on the calculated correlation ~~and a multiple-access interference among the plurality of signals transmitted from the plurality of communication terminals~~ having the multiple-access interference removed therefrom.

Claim 10 (Currently Amended). A program used by a computer to perform communication with a plurality of communication terminals in a multiple-access communication system, the program comprising the steps of:

calculating a correlation of a received signal including a plurality of signals respectively transmitted from the plurality of communication terminals using ultra-wideband (UWB) communication waveforms with respect to pulses at possible positions in the respective signals transmitted from each of the plurality of communication terminals; ~~and~~

removing a multiple-access interference among the plurality of signals transmitted from the calculated correlation; and

demodulating data transmitted from each of the plurality of communication terminals based on the calculated correlation ~~and a multiple-access interference among the plurality of signals transmitted from the plurality of communication terminals~~ having the multiple-access interference removed therefrom.

Claim 11 (Currently Amended). A storage medium storing a program used by a computer to perform communication with a plurality of communication terminals in a multiple-access communication system, the program comprising the steps of:

calculating a correlation of a received signal including a plurality of signals respectively transmitted from the plurality of communication terminals using ultra-wideband (UWB) communication waveforms with respect to pulses at possible positions in the respective signals transmitted from each of the plurality of communication terminals; and

removing a multiple-access interference among the plurality of signals transmitted from the calculated correlation; and

demodulating data transmitted from each of the plurality of communication terminals based on the calculated correlation and a multiple-access interference among the plurality of signals transmitted from the plurality of communication terminals having the multiple-access interference removed therefrom.